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ABSTRACT

During the 1985-86 academic year, 340 freshmen and seniors at The Ohio State University (OSU) participated in the OSU Global Awareness Survey. The students were self-selected from a randomized sample of all freshmen and seniors at the University. The survey instrument was a modified version of the "Measures of Global Understanding" survey designed by the Educational Testing Service for a national survey in 1980. This report describes and analyzes OSU students knowledge about the world and what factors seem to influence their performance on the cognitive portion of the survey. The report discusses: (1) the OSU Global Awareness Survey, the sample, and the survey instrument; (2) students' knowledge about the world and sub-dimensions within the knowledge test; (3) differences across enrollment and among colleges; (4) external factors that are non-actionable, and external factors that may be actionable; (5) the potential importance of coursework; (6) information about increasing international awareness; (7) testing for spurious relationships; (8) the hierarchy among actionable variables; and (9) directions for University policy. Seniors in humanities, mathematics, and physical sciences had the highest average scores. A detailed description of the sampling procedures and survey instrument used in the OSU Global Awareness Survey is appended. (SM)

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UNDERSTANDING THE GLOBAL ARENA

A Report on The Ohio State University Global Awareness Survey

by

Robert B. Woyach
Citizenship Development for a Global Age Program
Mershon Center

March, 1988

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SUMMARY OF FINDINGS

During the 1985-86 academic year, 340 freshmen and seniors at The Ohio State University participated in the OSU Global Awareness Survey. The students were self-selected from a randomized sample of all freshmen and seniors at the university. The survey questions obtained information on the students' backgrounds and attitudes and also provided baseline information on their knowledge about the world. The survey instrument was a modified version of an instrument designed by the Educational Testing Service for a national survey in 1980.

This report describes and analyzes how much Ohio State students know about the world and what factors seem to influence their performance on the cognitive portion of the survey. The key descriptive findings include the following:

1. On average, seniors at Ohio State answered 59% of the test questions correctly. This was significantly better than the average score for freshmen (49%) and better than the average senior score in the 1980 national sample (50%).

2. Significant differences appear in the test scores across colleges at Ohio State, however. As in the national sample in 1980, seniors in Humanities and Math and Physical Sciences had the highest average scores. Seniors in Dental Hygiene, Pharmacy, Social Work, Home Economics, Education and Social and Behavioral Sciences had scores significantly below the average for all seniors.

3. Significant differences also emerged in looking at scores across six different types of questions, or substantive domains within the overall knowledge test. Ohio State seniors did best on questions related to Third World development. They were least adept on questions related to humanities (that is history, religion and art).

4. Several background characteristics were related to a student's overall performance on the test. Men scored higher than women. Older seniors scored more highly than 22 year olds. Students with higher grade point averages, students whose parents had traveled abroad and students whose mothers were college educated also scored more highly. However, none of these factors explained away the statistical relationship between a student's college and his or her overall knowledge.

5. Students' life experiences, interests, and college experiences also influenced their scores. Students who had traveled abroad and who were attentive to international news scored more highly than others. So did students who had taken a foreign language and who reported frequently discussing world problems in college classes.

The survey results raise important questions for the university.

First, while Ohio State students did better than the 1980 national sample, it is not clear that the university community should be satisfied with the level of international awareness exhibited by them. In the case of education majors and social and behavioral science majors the results are actually cause for concern.

Second, in many cases the task of increasing international awareness resurfaces the perennial question of the appropriate mission of the university. Students in colleges primarily concerned with pre-professional and technical training tended to do more poorly than those in colleges with clear liberal arts mandates. Should there be a greater emphasis on liberal education throughout the university? In this regard it should be noted that some pre-professional and technical colleges achieved average or even above average scores (e.g., Allied Medical Professions, Nursing, Architecture, Natural Resources, Agriculture and Engineering).

Third, the process of increasing international awareness may require more than a change in the curriculum pattern. Requiring a foreign language, an international course or even more history may help. But in order to significantly affect the majority of students, it may be necessary to change the "culture" of the university and its colleges so that interest in and knowledge about world affairs is routinely expected and rewarded. If students are to seek out information about the world, and respond to opportunities to learn about world affairs, they probably must see the international environment as relevant to their lives. They probably must also see that knowing more about the global environment can help them to succeed in life.

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Introduction

In 1980 the New York-based Council on Learning, in cooperation with the Educational Testing Service, designed and conducted a national survey to determine the international awareness of American college students. A distinguished panel of experts was assembled to help in the conceptualization of the overall knowledge test. Educational Testing Service staff constructed and validated individual items. Over 3,000 students from colleges and universities throughout the country were included in the survey sample.

The results of the Council on Learning study raised serious questions about the quality of international education in the nation's colleges and universities. On average, seniors at four-year institutions could only answer 50% of the knowledge items correctly. Freshmen did even more poorly (41%) while students at two-year colleges scored the worst (40%). (Klein and Ager, 1981; p. 60) While the 101 item test was considered "demanding" by some of those involved in its design (Torney-Purta, 1982: 200-201), it also reflected what many experts and educators agreed was basic, multi-disciplinary knowledge about the global arena. While some items reflected more specialized knowledge, the majority could be reasoned out correctly by students who had a good basic understanding of their world.

In 1984 the Director of the Mershon Center, Charles Hermann, with support from the Office of International Affairs and Vice Provost Francille Firebaugh, initiated a study of Ohio State students as a follow-up to the Council on Learning study. Dr. Robert B. Woyach of the Mershon Center faculty was asked to direct the study.

Since the mid-1970's Ohio State had attempted to increase its commitment to international education in a variety of ways. The survey was intended in part to explore whether those efforts had borne fruit. As importantly, the survey was intended to help indicate how the university might further improve students' understanding of their world.

This report describes and analyses data on the international knowledge of those Ohio State students who participated in the OSU Global Awareness Survey during the 1985-86 academic year. The report has four parts. Part I briefly describes the survey process, sample and instrument. Part II reports on the performance of students with respect to cognitive knowledge about the world. Differences between freshmen and seniors and differences among seniors across enrollment colleges are analyzed. Parts III and IV look at the impact of several variables on international knowledge in order to explore how the university might expand the international awareness of students.

I. The OSU Global Awareness Survey

Data for the OSU Global Awareness Survey was gathered during the 1985-86 academic year. In all, 340 students participated in the 90-minute survey of international attitudes, knowledge and background characteristics. Of these 314 were seniors and 26 were freshmen.

The Sample

The majority of students who participated in the survey were self-selected from a stratified random sample of freshmen and seniors drawn in the fall of 1985. The sample of seniors was stratified to include analyzable numbers for every enrollment college and school at the university. The sample of freshmen was divided among those enrolled in the special freshman college (University College) and those enrolled directly in various academic units. Because of small response rates, the samples of seniors for two colleges (Social and Behavioral Sciences and Education) had to be supplemented with students recruited non-randomly by faculty in the Departments of Geography and Theory and Practice.

The students in the sample in many ways represent the complexity of Ohio State's student population. While the majority were following normative educational career paths, about 24% of the seniors were 24 or older reflecting both delayed graduations and delayed college careers. Only 47% of the students had college educated fathers (bachelors degree or higher) and only 26% reported that their mothers were college educated. Unlike the university as a whole, the sample was almost evenly split between men (49%) and women (51%).

In terms of their contact with international affairs, the students reported unexpectedly high levels of involvement in international activities of one kind or another. Forty-four percent (44%) of the students indicated that their parents had traveled abroad and 26% indicated that one or more of their parents worked in a job that involved some contact with people from other countries. Slightly over 73% of the students reported that they themselves had traveled to another country (including Canada), although almost 72% had been outside the United States for less than a month. Over half of the seniors (57.3%) had taken a modern foreign language in college.

The Survey Instrument

In order to ensure comparability with the original Council on Learning study, and to by-pass problems of instrument design and validation, the Ohio State Global Awareness Survey used a modified version of the Educational Testing Service's original "Measures of Global Understanding" survey. The key section of that instrument was a 65-item test of knowledge about world problems and world affairs.

II. Students' Knowledge About the World

How much do Ohio State students know about their world? And to what extent does their experience at the university contribute to their understanding of it?

Table 1 reports data on the results of the cognitive portion of the ETS survey. The table distinguishes scores for all freshman and all seniors. In addition, it breaks down

both groups into their enrollment colleges and schools. Freshmen are broken down into two groups: those enrolled in University College, and those enrolled in the various academic colleges. Information is presented on all 20 enrollment colleges and schools for seniors, although the sample sizes for many of these colleges are clearly too small to draw general conclusions from the data.

Table 1

Average Scores on the Test of Cognitive Knowledge Broken Down by Class and College

Class/College or School	N	Average Percent of Knowledge Items Answered Correctly (and standard deviations)	
All Freshmen	26	48.8 (12.7)	
University College	13		45.2 (11.0)
Direct Enrollments	13		52.3 (14.6)
All Seniors	314	59.2 (14.4)	
Humanities	30		67.1 (12.5)
Math/Physical Sciences	26		65.1 (12.8)
Natural Resources	13		64.7 (9.4)
Agriculture	12		63.2 (11.4)
Biological Sciences	19		63.0 (14.4)
Architecture	10		62.0 (17.5)
Journalism	15		61.5 (13.3)
Administrative Sciences	29		59.0 (8.7)
Engineering	30		58.9 (14.6)
Arts	12		58.8 (11.6)
Nursing	12		58.8 (13.7)
Allied Medical Professions	11		58.2 (8.4)
Arts and Sciences	12		56.4 (10.5)
Social/Behavioral Sciences	28		54.2 (19.3)
Home Economics	8		52.7 (13.8)
Education	36		51.9 (16.7)
Pharmacy	4		50.0 (17.3)
Social Work	5		48.3 (16.3)
Dental Hygiene	2		42.3 (7.6)

From one perspective the results of the Ohio State survey are encouraging. The data in Table 1 support the inference that the average Ohio State student leaves the university more globally knowledgeable than when she or he arrived. The average freshman who participated in the survey answered 49% of the items correctly. The average senior answered 59% correctly. This difference is statistically significant ($F = 12.73$; $p = .00$; $eta^2 =$

.036)*. This performance was also better than that obtained in the 1980 Council on Learning study. In that study, freshmen on average answered only 42% of the questions correctly. Seniors could answer only 50% on average. Thus while the overall results of the knowledge test at Ohio State present room for improvement, there was apparent improvement over the 1980 national results.

Important and in some cases disconcerting differences appear when one looks across colleges, however. Freshman, for example, who enrolled directly in academic colleges scored significantly higher than those in University College (52% compared with 45%). In fact they scored as high or higher than seniors in four different colleges: Dental Hygiene (42%), Education (52%), Pharmacy (50%) and Social Work (48%).

Overall, seniors in seven colleges and schools performed above average on the knowledge test (Agriculture, Architecture, Biological Sciences, Humanities, Journalism, Math and Physical Sciences and Natural Resources).

Humanities students scored higher than any other group on the 65 item survey (67%). This mirrored results in the original Council on Learning study in which history majors scored highest with 59%. This performance is particularly significant because the test items are dominated not by questions on history or culture but by questions on contemporary global issues (food, energy, development and relations among states). Humanities courses might not be expected to teach this particular content. On the other hand, they may teach the general knowledge and cognitive skills needed to infer answers successfully.

Even less explicable is the relatively high showing of math and physical science majors (65% correct). Again the result mirrors the Council on Learning study in which math students had the second highest scores (Klein and Ager, 1981, p. 65).

Seniors in five colleges and schools scored well below the average for all seniors. These included Social Work, Education, Dental Hygiene, Social and Behavioral Sciences and Home Economics. In the original Council on Learning study, education majors had the lowest scores of any group (39%). At Ohio State, seniors enrolled in the College of Education improved markedly on those results but were still among the lowest (52%). As noted in the Council on Learning study, this result is particularly troubling in that these are the future teachers of our young people. It should be noted, however, that almost two-thirds of the education majors who took the Ohio State survey were in elementary education. The relatively high standard deviation associated with the mean for this group indicates a higher than average diversity within the group.

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* These measures of association are used repeatedly in this report. The value of F, or the F-ratio, measures the statistical significance of a relationship between two variables. If F is greater than 1, the relationship is unlikely to be due to chance alone. There is no upper limit to the value of F. The value of p is associated with the F-ratio. It reports the probability limits of F. The lower the value of p, the greater the confidence one can have in the value of F. Finally, the actual strength of a relationship, that is the variance in the dependent variable that can be explained by the independent variable, is measured by eta^2. The value of eta^2 can range from 0 to 1 and can be interpreted in basically the same way as r^2.

More surprising were the results for social and behavioral science majors. While social science majors had above average scores on the Council on Learning Study (Klein and Ager, 1981, p. 65), seniors enrolled in the social and behavioral sciences at Ohio State scored well below average on the test as a whole (54%). Given the test's emphasis on contemporary global issues and international relations, and the large proportion of geography majors in the sample, one might have expected this group to score higher. At the same time, the standard deviation for social and behavioral science majors is the highest of any college, reflecting very high diversity within the group.

Sub-dimensions Within the Knowledge Test

In the Original Council on Learning Study an effort was made to look at the results for sub-dimensions of the knowledge test in order to identify particular areas of strength and weakness in student knowledge. Initial efforts to identify dimensions among the items through factor and canonical analysis did not reveal significant sub-dimensions. However, six logically derived dimensions did show that students did better on certain parts of the test than others. (Klein and Ager, 1981, p. 61)

A similar set of sub-dimensions of the knowledge test were analyzed for the Ohio State study. The dimensions were:

1. **Ecological Issues:** a set of twenty items having to do with energy, hunger, population and the environment.

2. **Humanities:** a set of 16 items having to do with history, religion and art.

3. **Development:** a set of 12 items dealing with problems faced by economically underdeveloped countries, the distribution of wealth globally and international efforts to promote economic development.

4. **International Politics/Security:** a set of 12 items on topics related to U.S.-Soviet relations, the arms race, nuclear strategy, and the power of such international institutions as the UN Security Council.

5. **International Economic Institutions:** a set of 11 items devoted primarily to international economic arrangements and institutions such as GATT and the gold standard.

6. **Geography:** a set of 5 map analysis items dealing primarily with physical geography. Students were, for example, asked to distinguish maps showing mean elevation, mean temperature and mean precipitation globally.

These six categories take different logical cuts at the overall knowledge test. Students who know more about ecological issues, for example, may or may not know much about GATT and the gold standard or about the security concept of "assured destruction."

Logically and empirically, however, the dimensions are not completely independent of each other. Some questions (for example, regarding the operation of the 19th century gold standard) are logically related to more than one dimension (in this case history and economics). Empirically, the overlap is significant in only one case. Forty-two percent of items on development dimension (primarily those questions related to agriculture) are also

coded as part of the ecological dimension. However, the relationship is not symmetrical. These same questions constitute only 25% of the ecological domain. In all but two other cases fewer than 20% of the items on any one dimension also appear on another. Six of the dimensional dyads are independent of each other (Ecological Issues-Geography; Ecological Issues-Security; Humanities-Development; Humanities-Geography; Development-Geography; Geography-Security; and Economics-Security).

As in the original Council on Learning study, Ohio State seniors tended to perform better on some types of items than others (Table 2). Overall, students tended to know most about questions related to the development issue. They also did relatively well on the five map questions. The results for development may indicate that Ohio State students do have reasonably good opportunities to learn about these issues. However, the conclusion that students had well developed map skills may or may not be warranted given the very limited number and homogeneous nature of the maps they were expected to interpret.

Table 2

Average Scores for All Seniors by Sub-dimension

Dimensions	Average Percent Correct for All Seniors (standard deviations)
Overall Test (65 Items)	59.2 (14.4)
Sub-dimensions	
Ecological (20 Items)	56.8 (15.8)
Humanities (16 Items)	49.8 (16.6)
Development (12 Items)	66.1 (19.5)
Security (12 Items)	56.7 (19.6)
Economics (11 Items)	54.6 (18.4)
Geography (5 Items)	74.8 (27.0)

Students' knowledge of humanities (i.e., items related to history, religion and art) was clearly the most limited (49.8% correct). Knowledge of items associated with economics, ecological issues and international politics/security were also relatively weak.

Differences Across Enrollment Colleges

When analyzed by college, the differences across these sub-dimensions revealed some surprising results. (Table 3)

Seniors in some colleges scored far better on certain dimensions than their overall results would suggest. Seniors in Allied Medical Professions and the Arts, for example, had above average scores on the Geography dimension. Students in Pharmacy had above average scores on the Economics dimension. Seniors in Nursing and Home Economics had above average scores on the Humanities items. Nursing majors also did well on questions related to Development.

Table 3

Profile of Colleges and Schools Across Sub-Dimensions of the Knowledge Test

Colleges	Ecological (54-60%)*	Humanities (48-52%)	Development (65-67%)	Security (54-60%)	Economics (52-58%)	Geography (70-80%)
Humanities	•	•	•	•	•	o
Math/Physical Sciences	•	•	•	•	•	•
Natural Resources	•	o	•	o	o	•
Agriculture	•	o	•	-	•	o
Biological Sciences	•	•	o	o	o	o
Architecture	o	•	o	o	-	•
Journalism	o	o	•	•	o	o
Administrative Sciences	o	-	•	-	•	•
Engineering	o	o	o	o	o	o
Arts	o	-	o	-	o	•
Nursing	-	•	•	o	-	-
Allied Medical Prof.	-	o	-	o	o	•
Arts and Sciences	-	-	o	o	-	o
Social/Behavioral Sci.	-	-	-	o	o	-
Home Economics	-	•	-	-	o	-
Education	-	-	-	-	-	-
Pharmacy	-	-	-	-	•	o
Social Work	-	-	-	-	-	-
Dental Hygiene	-	-	-	-	-	o

* Range of values considered to be average for the population
• College average is above the average range for the population
o College average is within the average range for the population
- College average is below the average range for the population

Similarly, while seniors in Administrative Sciences generally scored only average on the 65 items overall, they did much better when looking across sub-dimensions. Administrative science majors had higher than average scores on the Geography, Economics and Development dimensions. The overall score for administrative science majors was brought down by their below average scores on items related to International Politics/ Security and Humanities.

Table 3 also reveals some consistent patterns. Students in Math and Physical Sciences and Humanities, for example, generally scored above average on all six dimensions. Alternately, seniors in Social Work, Education and Dental Hygiene generally scored below average on all the dimensions. Seniors in Social and Behavioral Science had below average scores on all but two dimensions: International Politics/Security and Economics.

III. Explaining Differences Among Colleges

Understanding why there are differences in the level of international understanding exhibited by students from different colleges is important. The colleges represent sub-environments within the larger university. It is within these sub-environments that students actually experience college life. College policies influence the majority of a student's coursework. A student's peer group, extra-curricular activities, perceptions of their future profession--indeed their whole approach to liberal education--can be influenced by the "culture" of their college. It is reasonable to assume that some college environments encourage greater international awareness than others. By understanding how college environments differ from each other, we may be better able to understand how the university can encourage international awareness among all students.

To test the impact of variables that might explain different international awareness across colleges, a series of analyses of variance were run on the data. In each run, a different independent variable was entered into the analysis as a control on the effect of a student's college.

The college variable itself had to be redefined for the analysis, however. As is apparent in Table 1, a number of colleges had student samples that were simply too small for a reliable and valid statistical analysis. Therefore, the colleges and schools were combined into "college clusters."

The key criterion for clustering colleges was an assumed homogeneity. Thus the schools that had been treated as independent enrollment units in Table 1 were combined with their parent colleges. Likewise, all those colleges concerned with pre-professional training in the medical field were combined into a single "cluster." Care was taken not to let the mean for the college cluster radically misrepresent colleges within the cluster. The college clusters created for the analysis were:

(1) Allied Medical Professions, Nursing and Pharmacy;
(2) Education and Home Economics;
(3) Arts and Sciences (General), Journalism and Arts;
(4) Biological Sciences and Math and Physical Sciences;
(5) Social and Behavioral Sciences and Social Work;
(6) Engineering and Architecture;
(7) Agriculture Natural Resources.

Two colleges were not clustered with any others: Administrative Sciences and Humanities. Further, the two Dental Hygiene students were dropped from the analysis because they seriously biased the cluster mean when combined with other logical colleges.

The relationship between these college clusters and student performance on the knowledge test was statistically significant ($F = 4.64$; $p = .00$) and reasonably strong ($eta^2 = .109$).

A total of 23 other independent variables were tested in analyses of variance to measure their impact on international knowledge and their effect on the significance of the college variable. Those 23 variables can be classified as follows:

(1) Variables that are external to the university and which the university cannot change or influence. Many of these essentially non-actionable or uncontrollable

variables, such as sex and age, were significantly related to international awareness in the ETS study. Their primary value in this analysis was to control for a spurious relationship between college and international awareness.

(2) Variables that are external to the university but which might be influenced by university policies. Such variables as international travel and the student's primary source of news may not be an intrinsic part of the culture of a college. But these types of variables may be influenced by that culture. Analyses of ETS data indicated that several variables of this type were important predictors of global awareness.

(3) Variables that are internal to the university and can be influenced or changed by university policies. Such variables as the frequency with which world problems are discussed in class and participation in university sponsored international programs may provide clues as to how university policies might directly encourage greater international awareness.

The results of this series of two-way analyses of variance, for those variables which proved to be relevant, are presented in Table 4.

External Factors That Are Non-Actionable

The results of the analyses of variance confirm that many variables that are external to the university and essentially non-actionable appear to be highly related to international awareness. The left hand column in Table 4 reports the F-ratio's and eta^2's for seven external/non-actionable variables.

In general, men scored more highly on the knowledge test than women, as did students with higher academic abilities as reflected in their college grade point average. Older seniors, that is students who had delayed graduation or had returned to college later in life, were more knowledgeable than seniors who had followed normative educational careers.

Several aspects of the student's home environment and experiences in high school also proved relevant. Students from families with higher socio-economic status, as reflected by the mother's educational attainment, scored better, as did students whose parents had traveled abroad. Students who remembered discussing world problems in high school classes were more knowledgeable than those who did not.

Interestingly, several background variables that were tested did not have significant relationships with international awareness. For example, whether students had taken a modern foreign language in elementary or secondary school was not significantly related to their international awareness, at least when controlling for the impact of the student's college. (The F-ratio's for these variables were 0.11 and 0.20 respectively.)

Likewise, while a mother's educational attainment was significantly related to international awareness, the educational attainment of the father was not ($F=0.26$). This may reflect the dominance of the mother's worldview on children. The mother's educational attainment may also better represent the socio-economic status of the family as a whole--and thus the complex of experiences, values and orientations that status may represent.

Table 4

The Impact of Intervening Variables on the Relationship Between College and International Awareness Among Seniors

Possible Intervening Variables (F; p; adjusted eta^2)	Effect of College Clusters (eta^2) Unadjusted	Adjusted
A. Uncontrollable Externals		
Mother's Educational Level ($F=3.52$; $p=.02$; $eta^2=.032$)	.102	.102 ($F=4.41$; $p=.00$)
Parents' Travel Abroad ($F=1.73$; $p=.19$; $eta^2=.005$)	.109	.109 ($F=4.51$; $p=.00$)
Age ($F=2.19$: $p=.11$; $eta^2=.078$)	.109	.102 ($F=4.40$; $p=.00$)
Sex ($F=23.65$; $p=.00$; $eta^2=.078$)	.109	.078 ($F=3.52$; $p=.00$)
High School GPA ($F=1.42$; $p=.24$ $eta^2=.010$)	.109	.102 ($F=4.29$; $p=.00$)
College GPA ($F=6.68$; $p=.00$; $eta^2=.062$)	.109	.109 ($F=4.67$; $p=.00$)
Discussed World Problems in High School Classes ($F=2.06$; $p=.10$: $eta^2=.020$)	.102	.109 ($F=4.46$; $p=.00$)
B. Influencable Externals		
Communicates with People Abroad ($F=1.05$; $p=.30$; $eta^2=.004$)	.109	.109 ($F=4.53$; $p=.00$)
Has Traveled Abroad ($F=18.98$; $p=.00$; $eta^2=.053$)	.109	.116 ($F=5.19$; $p=.00$)
Weeks Spent Outside the US ($F=5.07$; $p=.00$; $eta^2=.058$)	.109	.122 ($F=5.33$; $p=.00$)
Frequency of Newspaper Reading ($F=4.97$; $p=.00$; $eta^2=.062$)	.109	.096 ($F=3.98$; $p=.00$)
Attention to International News ($F=23.35$; $p=.00$; $eta^2=.068$)	.109	.084 ($F=3.74$; $p=.00$)
Primary Source of News ($F=5.05$; $p=.00$; $eta^2=.048$)	.102	.090 ($F=3.80$; $p=.00$)
C. Internal Actionables		
Participated in OSU Study Tour ($F=3.02$; $p=.08$; $eta^2=.010$)	.109	.102 ($F=4.43$; $p=.00$)
Discusses World Problems in OSU Classes ($F=3.68$; $p=.01$; $eta^2=.036$)	.109	.130 ($F=5.14$; $p=.00$)
Has Taken a Modern Foreign Language in College ($F=1.03$; $p=.31$; $eta^2=.005$)	.109	.102 ($F=4.38$; $p=.00$)

Finally, while parental travel abroad was related to a student's scores on the knowledge test, other aspects of parental involvement in the world were not highly related. The F-ratio's for such variables as routine correspondence with people abroad ($F=0.34$), reading international news ($F=0.69$) and working for an internationally involved company ($F=0.32$) were all below 1.0. It may be that only travel reflects a strong enough level of international involvement to influence children's perceptions of their world. More likely perhaps, only travel is a dramatic enough linkage to be reliably noticed by children.

What is most striking here, however, is not that such factors as age, sex and socio-economic status have an impact on international awareness. More important is the finding that these factors taken individually **do not significantly explain the relationship between college and international awareness**. Only when controlling for a student's sex is there a meaningful decline in the relationship between college and the percent of questions answered correctly. Even when these background variables were entered into a five-way analysis of variance, the relationship between college and international knowledge remained statistically significant ($F=3.22$; $p=.00$) and reasonably strong ($eta^2=.07$). Thus the relationship between college and international awareness lies outside these uncontrollable external factors.

External Factors That May be Actionable

The second set of variables presented in Table 4 represent factors which are essentially external to the college environment but which may be influenceable by college or university policies. A student's contact with people abroad, whether a student has traveled abroad, or a student's attention to international news may be influenced by the culture of the university and the expectations placed on students in order to "fit in."

Here again, some significant relationships emerged from the analyses of variance. Students who reported reading international news in newspapers scored far higher than those who did not. In fact simple dependence on the newspaper for information and the habit of reading the newspaper regularly were almost as important in explaining a student's international awareness as their attention to international news. This may suggest that it is more important that students be attentive to and concerned about their social and political environment, and that they seek detailed information about it, than that they pay attention to international news per se.

Likewise, students who had traveled abroad were more knowledgeable than those who had not. Importantly, while the amount of time spent outside the country was statistically significant, it was not any more powerful an explicand of international awareness than the fact that the student had been outside the country at all. This may reflect the catalytic nature of international travel. But it may also reinforce the idea that students who see the world as relevant, and therefore seek travel experiences, also tend to learn more about international affairs and problems.

As with the essentially uncontrollable variables, none of this second set of variables explains away the relationship between college and international knowledge. Only when controlling for whether a student reads international news did the relationship between college and knowledge decline, and then not significantly. In the case of travel abroad, the relationship between college and international awareness actually grew stronger, implying that the variables are related in a reinforcing way but that international travel does not represent an important reason for the differences among colleges.

Controllable Factors Internal to the University

The third set of variables tested were those related to internal factors, that is factors representing some dimension of the university. It is presumed that these factors are all actionable; although it need not be assumed that policies affecting these variables are easily changed. Only four internal variables were available for the analysis: participation in OSU-sponsored study tours, discussion of world problems in class, involvement in other OSU-sponsored international events and whether the student has taken a modern foreign language in college.

Of the four internal variables tested, three were significantly related to international awareness. Students who had taken classes in which world problems were discussed had higher levels of international awareness, as did students who had taken a modern foreign language. As would be expected from previous findings about international travel, students who had participated in OSU study tours were also likely to have higher scores on the knowledge test. The fact that participation in study tours explains less variance in international knowledge than general travel primarily reflects the fact that relatively few students depend on study tours for their travel opportunities. But this also suggests that travelling abroad for any number of reasons can be as effective in opening students' eyes to the world as travel taken in the form of an educational study tour.

Surprisingly, none of these internal variables explained away the relationship between college and international knowledge. Indeed, when controlling for the discussion of world problems in class, the relationship between college and international knowledge grew measurably stronger. Even when a set of six actionable variables were entered into a multiple analysis of variance, the relationship between college and international knowledge remained nearly as significant statistically ($F=4.59$; $p=.00$) and as strong ($eta^2=.10$) as in the bivariate analysis. Thus these factors do not appear to tap those dimensions of the college environment that most contribute to the relationship found here.

The Potential Importance of Coursework

These analyses of variance clearly revealed a number of variables that help to explain the differences in international awareness *among students*. Many of the findings are consistent with past analyses which have shown the importance of reading newspapers, and of such background variables as sex and age. Past studies have generally not looked at or have not as clearly shown the impact of parental international involvement. At the same time none of these variables explains away the impact of college on international awareness. That is, none apparently represents a key factor in that constellation of variables that is represented by a student's college. In short, these variables do not significantly contribute to our understanding of why students in some colleges are more knowledgeable about the world than students in other colleges.

A simple and still untested answer to this question may lie in the types of courses that students in the different colleges have taken. Analysis of the original Council on Learning data, which are not completely adequate in this regard, suggests that the number of history or geography courses a student has taken may be significant in explaining international knowledge. However, the number of courses in economics, foreign language and international relations that a student has taken may not be important.

(Torney-Purta, 1982, p. 204) Data on coursework is currently being coded from student transcripts and will be available for future analyses.

IV. Increasing International Awareness

In the analysis an explicit effort was made to identify and test the impact of variables that are actionable, that is which may to one degree or another be affected by college or university policies or by the culture of the university. These actionable variables, if significantly related to international awareness, provide the best guides as to how the university or its colleges might go about encouraging greater international awareness on the part of students.

Five variables in particular may warrant further exploration in this regard: travel abroad, newspaper reading, reading of international news, discussion of world affairs in college courses and taking a modern foreign language. While none of these variables appeared to explain the relationship between college and international knowledge, each does apparently contribute to international awareness as measured on the ETS instrument. Each may also be actionable to some extent. For example, college or university graduation requirements could encourage more students to travel abroad or to take a foreign langauge. Colleges could also facilitate or reward attention to international news and the discussion of international problems in certain classes. A college's very approach to education--as narrow pre-professional training or as a liberal education experience--may itself be an important part of the culture it creates for students.

But whether or not policy changes of this nature would be relevant requires a more careful analysis of their impact on international awareness. Are these variables still significant when controlling for various other factors? Or do their relationships with international knowledge fade away when taking a student's age, sex, intelligence or socio-economic background into account? Is there a hierarchy among these actionable variables, such that one or two stand out as the most important targets for policy change?

Testing for Spurious Relationships

The impact of these four actionable variables was tested in a sequence of five-way analyses of variance to find out if they remained significantly related to international knowledge when controlling for key background variables. The results of this analysis appear in Table 5.

As Table 5 indicates, all five variables remain significantly related to a student's international knowledge when controlling for age, sex, mother's educational attainment and college grade point average. In fact, the impact of having taken a modern foreign language and of in-class discussion of world problems rises when controlling for those background factors that apparently pre-dispose students toward greater international awareness. Thus it would appear that university policies aimed at increasing student interest in travel abroad, and at increasing students' attention to news, especially international news, could have an impact on the general level of international awareness. Likewise, greater attention to world affairs within college classes could similarly increase student awareness of their world. It may be useful to require or encourage students to take foreign languages.

Table 5

Impact of Actionable Variables on International Awareness Controlling for Background Characteristics

Independent Variables and Bivariate Measures of Association (F; eta^2)	Effect of Variable When Controlling for Age, Sex, Mother's Education and College Grade Point Average F (p)	eta^2
Has Traveled Abroad ($F=14.47$; $p=.00$; $eta^2=.044$)	7.48 (.01)	.020
Frequency of Newspaper Reading ($F=6.16$; $p=.00$; $eta^2=.073$)	5.30 (.00)	.058
Attention to International News ($F=38.96$; $p=.00$; $eta^2=.102$)	16.01 (.00)	.044
Discusses World Problems in OSU Classes ($F=2.12$; $p=.10$; $eta^2=.020$)	2.43 (.07)	.020
Has Taken a Modern Foreign Language in College ($F=4.06$; $p=.04$; $eta^2=.012$)	6.97 (.01)	.017

The Hierarchy Among Actionable Variables

A final analysis of variance was run to see if a hierarchy emerged among the four key actionable variables when placed within a single statistical model. Table 6 reports the results of this final analysis of variance.

When controlling for the impact of other actionable variables, it would appear that the most significant influence on the level of a student's international knowledge is their attention to international news ($F=33.42$; $eta^2=.090$). Encouraging travel abroad appears also to have a high relationship to increasing international awareness when controlling for these other actionable variables ($F=16.25$; $eta^2=.040$).

The data in Table 6 would seem to support the conclusion that requiring a modern foreign language or encouraging the discussion of world problems in class are far less effective strategies for increasing international awareness. While both of these variables remained significant when controlling for the other actionable variables, neither is as powerful a predictor of international knowledge as are attention to international news and travel abroad.

Table 6

The Hierarchy Among Actionable Variables That Influence International Awareness

Independent Variables	Measures of Association/Impact Controlling for Other Variable F (p)	eta^2
Attention to International News	33.42 (.00)	.090
Has Traveled Abroad	16.25 (.00)	.040
Has Taken a Modern Foreign Language in College	4.06 (.04)	.010
Discusses World Problem in OSU Classes	1.65 (.18)	.012

Conclusions: Directions for University Policy

The results of the OSU Global Awareness Survey support three general conclusions.

First, seniors at Ohio State are more internationally aware than seniors in the national sample of 1980. This may reflect an improvement in international awareness over the past four years, or it may be that Ohio State students, even in 1980, were above average. Clearly the improvement may be attributed to many factors including pre-college training, the university's efforts, or even the different international context in which the nation finds itself today as opposed to 1980.

What is less clear is whether the scores of Ohio State seniors are high enough or even how that judgement might be made! The experts designing the Council on Learning test of knowledge regarded it as a fair measure of basic knowledge about the global arena. Despite its demanding nature, should students be expected to answer all 65 items correctly? Is a score of 80% or 90% acceptable? No effort has ever been made to define an acceptable performance criterion for the test. The test has never even been administered to potential criterion groups (e.g., average American adults, graduate students, university faculty, or majors in international studies) who collectively may provide a realistic basis for assessing the performance of undergraduates.

Second, while Ohio State seniors on average appear to have higher international awareness than students in 1980, performance across colleges is highly uneven. Two separate issues may be raised here.

On the one hand, seniors enrolled in such colleges as Social and Behavioral Sciences and in Arts and Sciences (General) scored lower than should be expected of students in these colleges. In this respect the OSU Study shows a relative fall-off from the Council on Learning results. While the majority of the majors within these colleges may not be

concerned directly with world affairs, students in arts and sciences should by definition be receiving a liberal education, and students in the social and behavioral sciences should be attentive to the world around them regardless of their specific major or professional goals. There is no reason to expect these students to perform less well than humanities, math or physical science majors--holding such variables such as age, sex and socio-economic status constant.

On the other hand, while students in such technical fields as Engineering, Allied Medical Professions and Nursing appear to gain an average level of international awareness at Ohio State, other pre-professional and technical programs like Education, Dental Hygiene, Pharmacy and Social Work may not. This finding must be considered tentative because of the small samples for most of these colleges. But if generally valid, it again raises the perennial question about the educational mission of the university. Greater emphasis on liberal education, which may be necessary to improve international awareness on the part of undergraduates, may detract from pre-professional training. This may make OSU graduates less competitive on job markets or may impede the university's efforts to attract appropriate students in these fields. Finding the appropriate balance between pre-professional and liberal education has never been easy. Yet, it would seem that colleges like Allied Medical Professions and Nursing have somehow balanced these two goals successfully enough that their students gain a reasonable awareness of the world by university standards.

Third, if the university or its colleges wish to raise international awareness among Ohio State students further, there may be several avenues which warrant further exploration and discussion. Seen in a broader perspective, the data may suggest that students who perceive the world to be relevant to their lives and/or their future--or who have developed a curiosity about world affairs, are more attentive to the world and thus learn more about world problems. In this sense increasing international awareness may depend primarily on the university's ability to open students' eyes to the interdependent world in which they live.

The task of opening students eyes to the world may require a complex approach. Travel may expand the horizons of some students. But most students may need to develop an interest in the world and a sense of its relevance before they will be open to a travel experience. Stimulating greater interest in world affairs may not be as "easy" as mandating an "international" course or a foreign language for graduation. Changing the curriculum pattern in these ways would probably help, but such courses may have little impact on students who see no utility in them. It may be as useful to require students to take more history, regardless of the explicit focus.

As important may be both subtle and not-so-subtle efforts to constantly stimulate and reinforce students' interest in their global environment and their sense of relatedness to it. Encouraging the discussion of international affairs in core courses within the colleges may be appropriate. So might efforts to give students a global perspective of their intended professions or fields. In short, increasing international awareness may require changes in the very culture of the university community and its colleges. At a mega-versity like Ohio State identifying opportunities for bringing students into contact with their world will not be difficult. Mobilizing the diverse set of opportunities needed to influence the majority of students may be.

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APPENDIX I

Survey Procedures and Sample for The OSU Global Awareness Survey

This Appendix provides the interested reader with the detailed description of the sampling procedures and survey instrument used in the OSU Global Awareness Survey.

The Survey Sample

Preparation for the survey began in the summer of 1985 with a series of meetings with officials in the Registrar's Office and University Systems. These meetings provided the baseline information and computer assistance needed to construct a procedure for producing a random sample of Ohio State freshmen and seniors to participate in the study.

In the fall of 1985, a stratified random sample of 1,160 current seniors and first quarter freshman was selected from the university's Live Student Data Base (i.e., the fifteen day tape compiled by the Registrar and University Systems). Statistics from the previous year indicated that as many as 39% of the university's total enrollment of seniors would be in two of the twenty enrollment colleges and schools at the university (i.e., Administrative Sciences and Engineering). Therefore, the sample was stratified in an effort to obtain analyzable samples for every enrollment college and school. Roughly equal samples of seniors were randomly drawn from each college and school to keep survey numbers manageable. A smaller stratified random sample of freshmen was drawn equally from those enrolled in University College (UVC) and from those freshmen who had enrolled directly into the various academic colleges. It was assumed that, as a group, the freshmen who had by-passed University College would be academically stronger than those in UVC.

Each student selected for the sample was sent a letter signed by the Provost asking them to participate in the "OSU Study." The letter indicated that the survey would take approximately 90 minutes to complete and was designed to help assess educational programs at Ohio State. While world affairs was mentioned in the letter, it was not stressed. Students were offered a $3.00 certificate for use at the OSU bookstore in appreciation of their contribution to the study.

A list of regularly scheduled survey opportunities (dates and times) was included with the letter. Students were asked to take the survey at one of those times if at all possible. In the event that none of the group times were convenient, however, students were instructed to contact the project director at the Mershon Center to arrange a personal appointment to take the survey. Reply postcards were included so that students could sign-up for one of the regularly scheduled survey times or could request to be contacted for a personal appointment.

During the Autumn Quarter 1985, only 121 students (10% of the sample) actually completed the survey. Ninety-five (95) of these were seniors. As a result the recruitment process was repeated during Winter Quarter 1986. For this second round emphasis was placed on recruiting seniors rather than freshmen. In an effort to increase the response rate, as many students as possible were contacted by telephone as well as by mail. The telephone contact ensured that the students had received the letter. It was believed that this personal contact would also increase the likelihood that students would respond

positively, although no pressure was put on students to participate. Telephone contacts were also used to follow-up with students who signed up for the survey but did not show up at the appointed times. In all, however, only about 20% of the students included in the Winter Quarter sample (approximately 240 students) were successfully contacted by telephone because of time and staff limitations.

By the end of the Winter Quarter 1986, a total of 290 students, including 249 seniors, had taken the survey. This represented a minimally acceptable sample for the overall analysis, although the samples for many colleges and schools were still too small to ensure statistical validity.

Because two key colleges (Education and Social and Behavioral Sciences) were still underrepresented in the data base, an effort to recruit additional seniors from these colleges was made during Spring Quarter 1986. Faculty in social studies education and in the Department of Geography were asked to help recruit the students. Seven geography students were subsequently recruited in this non-randomized fashion. They represent approximately one-third of the total respondents for the College of Social and Behavioral Sciences. Two classes of education majors also participated in the study. The smaller group (nine students) was enrolled in a class on secondary social studies methods. The larger (23 students) was enrolled in a methods class focused on combining science and language arts instruction at the elementary level.

By the middle of Spring Quarter 1986, 340 students had completed the survey. Of these, 314 were seniors; 26 were freshmen.

Characteristics of the Students Surveyed

Although the general survey sample consisted almost entirely of self-selected students, and a very small percentage of the randomized sample, there is no clear reason to believe that this sample is unduly biased in important ways.

In terms of their background, the students in the sample seem to represent the complexity of Ohio State's student population. The majority were following normative educational careers, freshmen clustering in around the age of 18, seniors clustering around age 22. However, a reasonably high proportion of seniors (10.5%) were 24 or 25 years old, reflecting the population of delayed graduations. Almost fourteen percent (13.5%) were older than 25, primarily reflecting people who were returning to college after raising children or as part of a career change. A few of the latter were people who had returned for a second degree as part of a career change. The sample probably reflects the distribution of grade and academic abilities within the university as well. Just under thirteen percent (12.9%) reported that their college grade point average was 3.5-4.0. Over twenty-six percent (26.5%) reported grade point averages of 3.0-3.4. Over thirty seven percent (37.4%) reported grade point averages of 2.5-2.9. Women are somewhat overrepresented in the sample, which is fairly evenly split between men (49%) and women (51%).

In terms of their backgrounds, the students in the sample did not tend to be from college educated families, but they and their families had an unexpectedly high involvement in international activities of one kind or another. Only 46.8% of the students had college educated fathers (bachelors degree or higher). Only 25.6% reported that their mothers were college educated. At the same time 44.4% of the students indicated that their parents had traveled abroad and 25.9% indicated that one or more of their parents

worked in a job that involved some contact with people in or from other countries. Slightly over 73% of the students reported that they themselves had traveled to another country (including Canada), but of these almost 72% had been outside the United States for less than a month. Almost a third of the students (32.6%) indicated that they routinely communicated with people (including Americans) who were living abroad. Almost twenty-six percent of the sample (25.9%) had taken a modern foreign language in elementary or middle school, while 68.2% had taken a modern foreign language in high school. Over half of the seniors (57.3%) had taken a modern foreign language in college.

The sample of students would appear to have a relatively high level of involvement in international relations. Yet, no data exists that would establish just how involved the average Ohio State student is in international travel or communication. Students at the surveys did not seem to be generally aware that the survey was focused on international studies. Thus, although this sample has an unexpectedly high level of international involvement, it seems unlikely that many, if any, of the students participated because of their interest in world affairs. By analogy, it is probably also the case that few students declined to participate because of a lack of interest in world affairs per se.

On the other hand, the sample is undoubtedly biased in other ways. It almost certainly contains a relatively high percentage of students who possess one or more of the following traits: (1) high responsiveness to authority figures such as the Provost, (2) positive affect toward the university, expressed in a willingness to contribute time to the survey, (3) a tendency to participate in projects when requested, and (4) a high tolerance for ambiguity and risk given the limited information about what was expected of them. While a sample that overrepresents such students is likely to be biased in certain respects, it is not obvious that students with these characteristics are likely to exhibit higher interest in or awareness of world affairs.

The samples of education and social and behavioral science majors, on the other hand, are more likely to contain an inherent bias with respect to world affairs interest and knowledge. Among social and behavioral science majors, geography students may have relatively high contact with world affairs in their courses. If so, the proportion of geography students in the sample (25%) may be large enough to bias the results for the college as a whole in an upward direction--other things being equal. In education, two diametrically opposed biases may have been introduced by the non-random sample. Of the 36 education majors who participated in the study, nine (25%) were secondary social studies majors. These students should have a higher than average interest in world affairs. On the other hand, the larger of the two non-random groups consisted of elementary education majors (64% of the college sample). Because of their coursework and the pedagogical orientation of elementary education, these students may be less motivated to gather the kind of information that would help them on the knowledge test. Thus the large percentage of elementary education majors may introduce a downward bias for the College of Education as a whole.

The Survey Instrument

In order to ensure comparability with the original Council on Learning study and to by-pass problems of instrument design and testing, the Ohio State Global Awareness Survey used a modified version of the Educational Testing Service's original "Measures of Global Understanding" survey.

The survey consists of four sequential components. The first section asks for general background information about the respondents. Students were asked to report their age, sex, sources of information, grades in high school and college, general political orientation and the like. Other questions ask about the degree to which world problems are discussed in class and the degree to which various types of courses had contributed to a student's perceived level of international understanding.

In the Ohio State study, this section of the ETS survey was supplemented with a series of questions about personal international activities, the international involvement of parents, and participation in university sponsored international programs. Additional questions measured the family's socio-economic status. The majority of these questions had been used in previous research on the impact of community-based approaches to international education. (Woyach and Love, 1983). Finally, students were asked to release their OSU transcripts to the project director so that information on international courses taken at Ohio State could be coded and entered into the analysis. These transcripts were not made available by the Office of Records until February 1987 and thus are not reflected in this analysis.

The second section of the ETS survey contains 42 items designed to measure attitudes toward international affairs. The first 32 items are Likert-type questions which asked students to report levels of agreement or disagreement to such statements as "Under some conditions, war is necessary to maintain justice." and "We should not allow foreign business enterprises to buy American farmland." A second set of 10 items asked students to decide whether or not a particular statement described them personally. Statements include such things as "I find the customs of foreigners difficult to understand." and "I make an effort to meet people from other cultures." These items describe a number of different attitudinal dimensions including openness to international participation and foreign ideas, pacifism/militarism, and attitudes toward international cooperation/coordination and world government.

The third section of the ETS survey contains 65 items drawn from the original 101 item test of cognitive knowledge. All but three of the 65 items are forced multiple choice questions. The three exceptions asked students to match physical maps of the world with captions identifying the characteristics shown on the maps. The majority of the 65 test items focus on contemporary international politics and such global issues as development, hunger, energy, population and human rights. A small percentage of items focus on historical knowledge. Fewer still represent knowledge of specific cultures. Thus the test does not require extensive information about particular world cultures nor does it measure knowledge about other cultures. Rather it measures more general information about international relationships and global issues, that is issues that are either felt across countries or which define the agenda for international conflict and cooperation.

The final section of the survey contains 10 items designed to obtain self-reports of students' foreign language training and their ability to communicate in a foreign language.

Survey Procedures

In the Ohio State study, students were allowed to take as much time as they needed to complete the entire survey. In general the survey required about 90 minutes. Some students finished in as little as an hour. A few students took over 2 hours to complete all items.